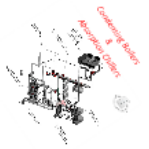




Sustainable Design Elements

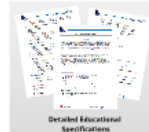
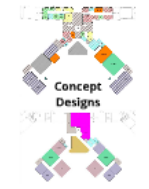


Combined Heating Cooling and Power



Chilled Beam HVAC

The Peers Were:  
- John B. Gable, AIA  
- CSO Lead Architect  
- Resonant Physical, P.L.L.C.  
- CSO LEED Planner  
- Mike Reed  
- CSO Principal



There is another component to our design process that isn't normally a part of standard design that we would like to talk with you about, and that is...

Calculated Performance Metrics (Energy, Carbon, Water, etc.)



Delaware West Tech Academy

We began by doing our homework to find out everything we could about P&E, and how to do it.



Delaware West Tech Academy

WELC - WELC  
The facility will be designed to meet the needs of the students and staff. It will be a state-of-the-art facility that will provide a high-quality learning environment. The facility will be designed to meet the needs of the students and staff. It will be a state-of-the-art facility that will provide a high-quality learning environment.

DESIGN PARADIGM  
Technology is not optional, it is essential to success. It is not just about the technology, it is about the people who use it. The facility will be designed to meet the needs of the students and staff. It will be a state-of-the-art facility that will provide a high-quality learning environment.

EVALUATE DESIGN PROPOSALS  
Evaluation of the design proposals will be based on the following criteria: 1. Functionality 2. Aesthetics 3. Sustainability 4. Cost-effectiveness 5. Flexibility 6. Scalability 7. Maintainability 8. Safety 9. Security 10. Accessibility 11. Energy efficiency 12. Water efficiency 13. Carbon footprint 14. Life cycle cost 15. Risk management 16. Compliance 17. Innovation 18. Leadership 19. Community engagement 20. Stakeholder satisfaction

DEVELOPS IN BUSINESS LEADERS



NewTech Network

Three Qualities of an Effective School Facility



EXEMPLARY

Facility is a visionary, motivational, state-of-the-art, healthy, high-performance teaching tool.

PROFICIENCY

Facility is functionally flexible, functionally progressive, structurally adaptable, instructionally supportive.

ADEQUACY

Facility is safe & secure, accessible, meets codes and regulations, minimum thermal, acoustic, and lighting requirements.

10:00

WHAT DID YOU COME UP WITH?



LEARNING SPACE MATTERS!

LEARNING SPACE MATTERS

- Good acoustics
- Easy clean surfaces
- Water conservation
- Good lighting
- Modern, functional, comfortable furniture



Let's clarify what you thought about New Tech advocates with what we've done in terms of design.

Remember Our Group Exercise?



# **EVIDENCE-BASED DESIGN FOR PROJECT-BASED LEARNING: A CASE STUDY FOR A 50,000 SF ADDITION DEDICATED TO THE NEW TECH CURRICULUM**

CEFPI World Congress on Educational Environments

September 23, 2012

San Antonio, TX



ARCHITECTS • ENGINEERS • FACILITIES SOLUTIONS

Philip Conte, NCARB, AIA  
Dick Moretti, Ed.D, REFP, LEED AP

# AGENDA

*What is Project Based Learning?*

*What is New Tech?*

*The New Tech Experience*

*Group Exercise*

*Our Planning Process*

*The Results*

*Your Ideas Revisited*

*Q & A*

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# AGENDA

*What is Project Based Learning?*

*What is New Tech?*



*Project Based Learning (PBL) is an instructional approach built upon authentic learning activities that engage student interest and motivation. These activities are designed to answer a question or solve a problem and generally reflect the types of learning and work people do in the everyday world outside the classroom.*



*What is New Tech?*



New Tech Network

# They Say...

## BLOW IT UP!

Teacher centered



*Student centered*

Working alone on  
short, simple tasks



*Working in teams on  
long, complex tasks*

Accountable to teacher



*Accountable to peers*

Passive learning



*Active learning*

Static Information



*Dynamic information*

# DEVELOPED BY BUSINESS LEADERS

- New Tech was started by community and business leaders
- It was designed to mirror the workplace through the use of real-world projects, relevant technology, and professional interactions



# DESIGN PRINCIPLES

Technology is not optional; it's as essential as water

- It does not replace good instruction, it amplifies it

21st Century skills are essential for success in college, world of work, and life

- Critical thinking, communications, collaboration, etc.

Learning requires engagement and relevancy

- Connect learning to real life contexts
- Everyone learns based on a personal "Need to Know"
- Internships connect content to the real world

## MORE DESIGN PRINCIPLES

Students do not all learn the same way or at the same pace

There's more than one right answer to a problem

Students need direct experience with "next steps"

- College courses on campus
- Business and community leaders on campus



## EVEN MORE DESIGN PRINCIPLES

Relationships matter

- Every teacher must know every kid's name

Environment matters

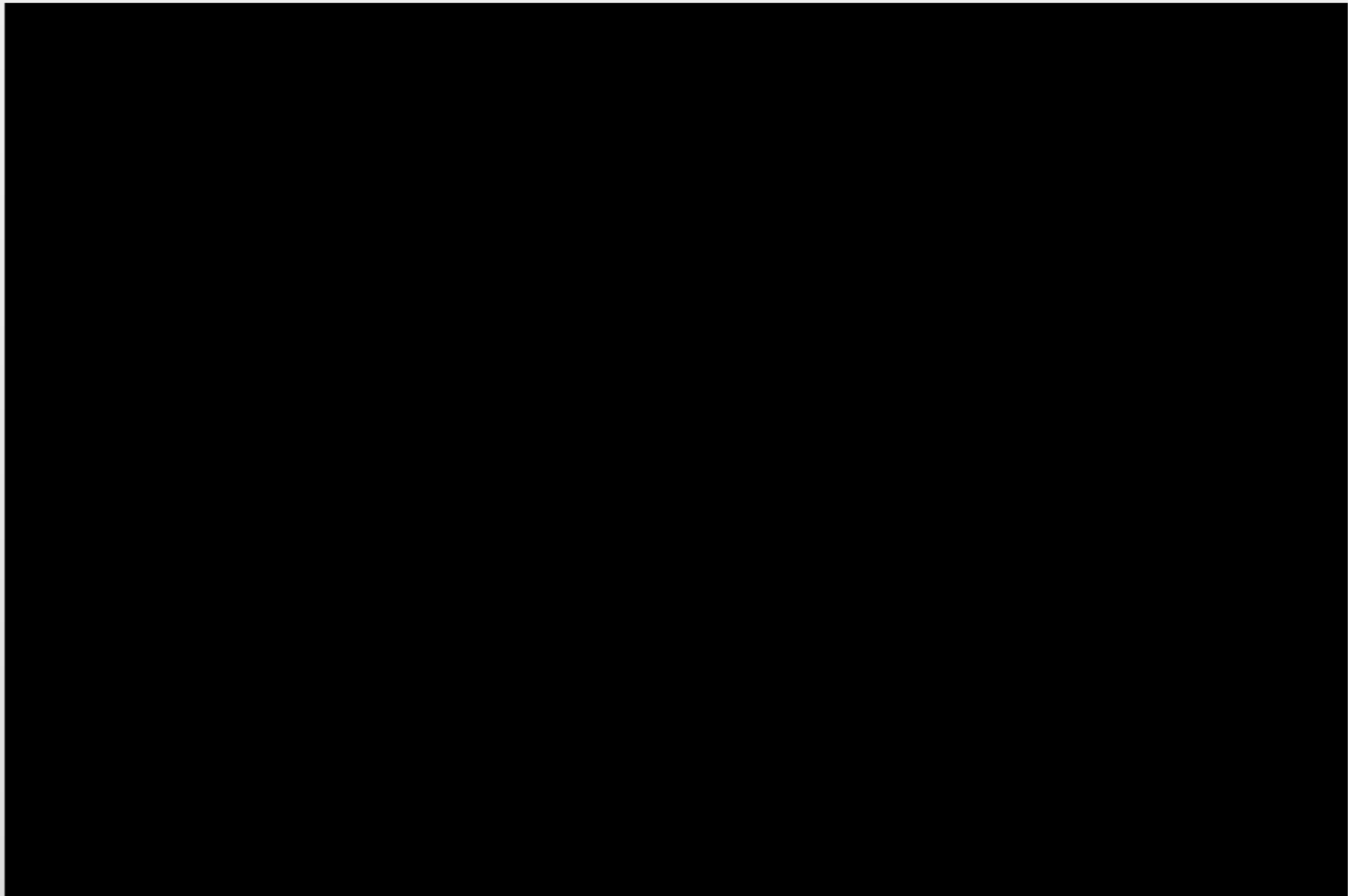
- Flexible, open spaces facilitate communication and collaboration

Teachers must be curriculum designers

- Facilitates customization to student needs
- Keeps teachers engaged

What gets measured is what gets done

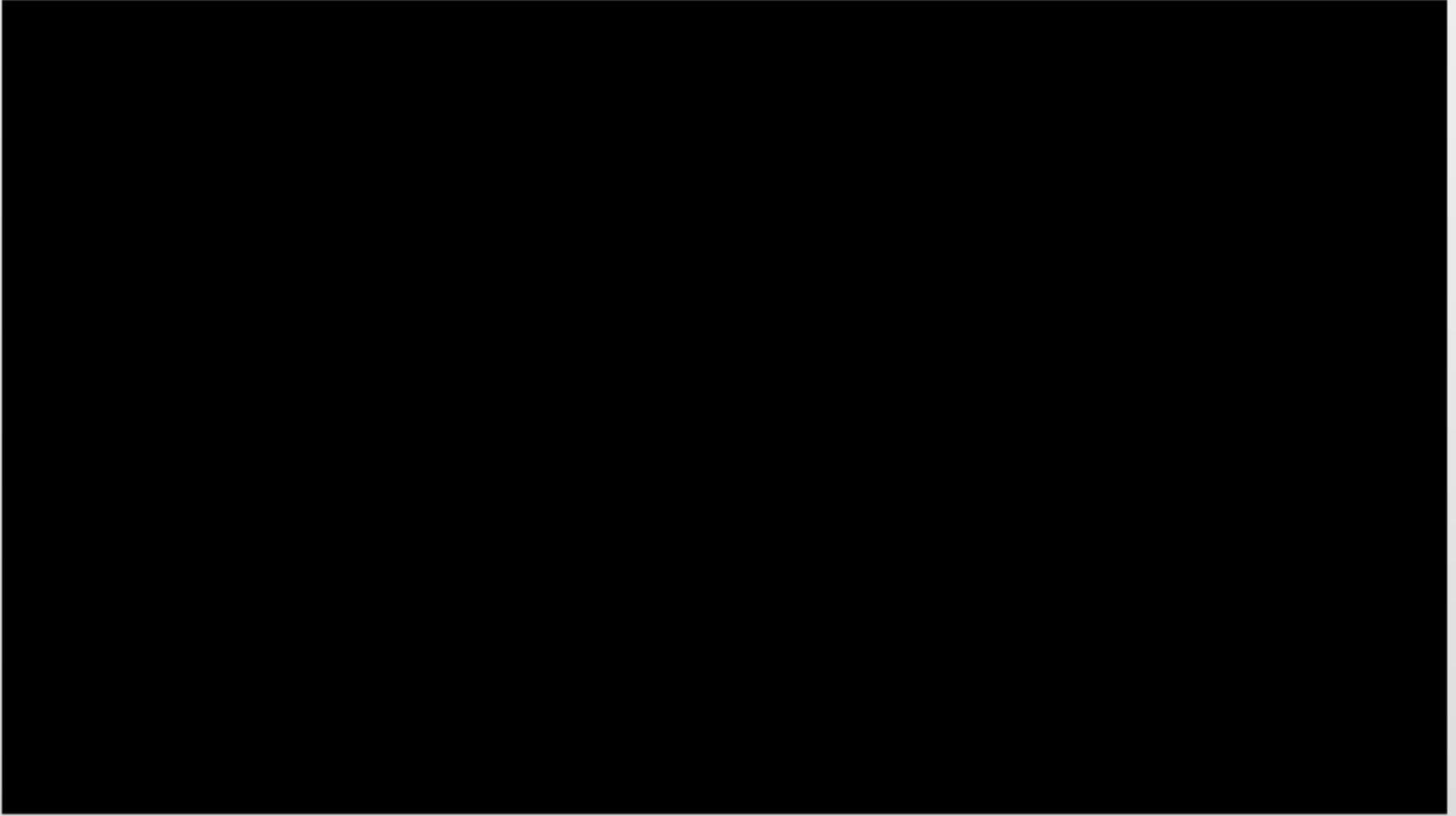
- Content mastery/state standards
- Embedded 21st Century skills



*What is New Tech?*

*The New Tech Experience*

*Group Exercise*





*Three Qualities of an  
Effective School Facility*

## **EFFICIENCY**

Facility is functionally flexible, functionally proximate, structurally adaptable, instructionally supportive

## **ADEQUACY**

Facility is safe & secure, accessible, meets codes and regulations, minimum thermal, acoustic, and lighting requirements

sustainable, healthy, high-performance teaching tool.

## **PROFICIENCY**

Facility is functionally flexible, functionally proximate, structurally adaptable, instructionally supportive

## **ADEQUACY**

Facility is safe & secure, accessible, meets codes and regulations, minimum thermal, acoustic, and lighting requirements



**EXEMPLARY**

Facility is a visionary, motivational, sustainable, healthy, high-performance teaching tool.

**PROFICIENCY**

Facility is functionally flexible, functionally proximate, structurally adaptable, instructionally supportive

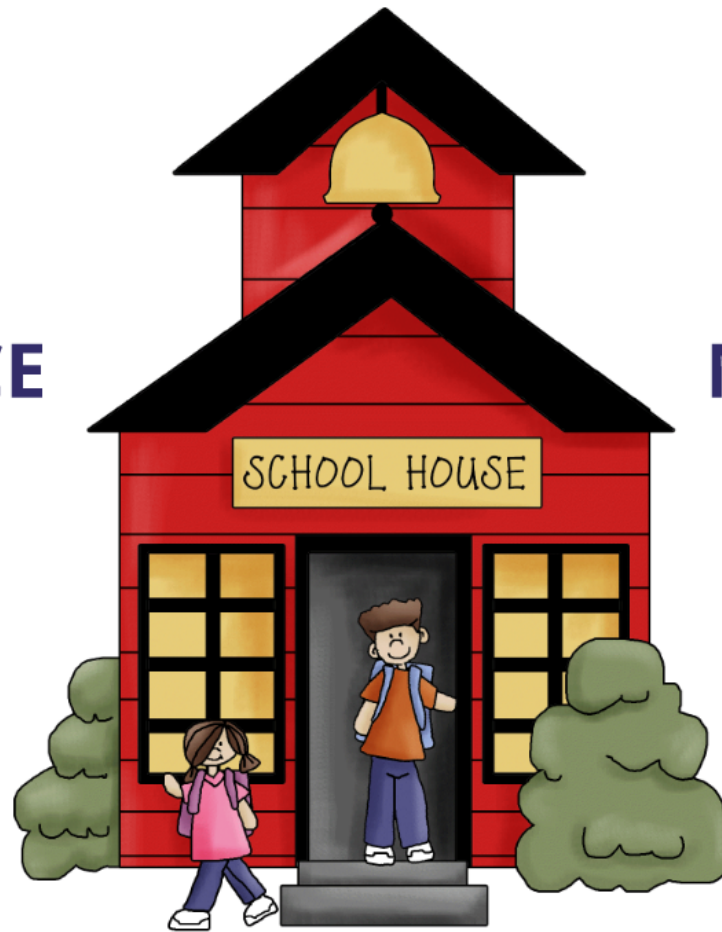
**ADEQUACY**

Facility is safe & secure, accessible, meets codes and regulations, minimum thermal, acoustic, and lighting requirements



# *Group Exercise*

**LEARNING SPACE**



**MATTERS !**

**WHAT DID YOU COME UP WITH**

# Given

- What you know about PBL
- What you know about New Tech...

*Break out into groups*

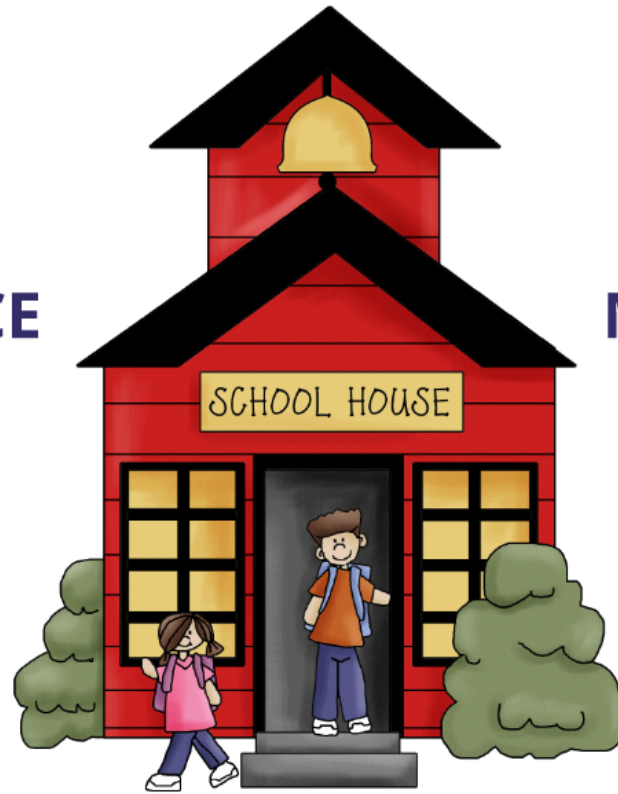
*of 3 - 5...*



...to discuss what building attributes might be found in a New Tech high school to support their curriculum that might not be found in a traditional high school

10:00

**LEARNING SPACE**



**MATTERS !**

**WHAT DID YOU COME UP WITH?**

*Group Exercise*

*Our Planning Process*

*The Results*





# **Delaware New Tech Academy**

**We began by doing our homework to find out everything we could about PBL and New Tech**

- **Researched PBL**
- **Researched New Tech**
- **Visited Columbus Signature Academy**
  - **Talked with the principal, students, lead architect, and educational planner**

# Columbus Signature Academy New Tech Campus



BY BUS

# Conducted Two Charrettes

- *Visioning Charrette*
- *Concept Design Charrette*

*Visioning Charrette*







INFORMATION

BIOGRAPHY



## NEED TO KNOWS

**Spatial Requirements** – How many units/rooms? Capacity of unit/room? Area of unit/room?

**Activities** – What is going on in the space? How is it used educationally?

**Space Relationship** – Necessary adjacencies (i.e. administration and guidance; science lab and prep. room and chemical storage room).

**Furniture & Equipment Requirements** – Fixed furniture. Moveable furniture. Special equipment.

**Environmental Requirements** – Lighting, ventilation, acoustics, window treatments.

**Utility Requirements** – Sink? GFCI outlets? Natural gas? Types of receptacles? Number of receptacles? Location of receptacles?

**Technology** – Wired? Wireless? Both? Audiovisual needs (interactive media, flat panel monitors, etc.). Telephone, intercom, sound enhancement, equipment (DVD, document camera, switcher, etc.), clock. Locations?

**Surface Material Requirements** – Floor, ceiling, walls. Tack Boards, white boards, etc.

**General Considerations** – Any general characteristics about the space including such items as transparency, flexibility, ambience/style (i.e. professional/business appearance), etc.

**Special Characteristics** – Any unique aspect of the space. This may include such things as moveable walls between rooms, raised floor, and even items on the outside of the space such as a green roof.


Res

*Resulting In*





Seaford School District  
Seaford High School Additions & Renovations Planning



- Wired LAN/Internet access at presentation station and at quad receptacles on 2 sides
- 10 (minimum) Wired LAN/Internet access spaced evenly around room (with duplex receptacles)
- 2 (minimum) Wired LAN/Internet access on wall above counters
- Telephone with intercom
- Sound enhancement system
- Document camera
- DVD/Blu Ray
- Interactive white board and short throw projector
- Controls for projection (either software or hardwired)
- 16 Portable PC stations containing monitor, PC, power and LAN cabling (for external plug-in)
- All technology/media to be digital (except clock)

**Surface Material Requirements**

- Walls capable of displaying student work - mountable strip above
- Durable wall structure to survive mobile furniture
- Ceiling surface to support acoustical performance
- Floor covering: VCT that creates a sense of space designation
- Counters to be Formica or similar material

**General Considerations**


- Maximum transparency between Integrated Studio
- Direct access and selective transparency
- Construction will be made "green" by the following elements:
  - High efficiency HVAC system
  - High recycled content or certified
  - Low VOC solvents/paints and
  - High efficiency lighting system

**Spatial Considerations**


- Consideration may be given to using glass walls
- Consideration may be given to providing LAN access spaced evenly, and at corner cabinet (if used as presentation station to power computers)

**Area B: Flex Studio**

**Spatial Requirements**



Seaford School District  
Seaford High School Additions & Renovations Planning



- Two corner cabinets with counter
  - Minimum of 2 LF of base/wall/counter space
  - Counter recommended to be 30" deep (24" minimum maximum ADA)
  - Counter height to be 36" (32.5" ADA) (under 1.5" thick counter)
  - Counter depth to be 12" or greater than 15" or greater than 18" above counter
  - Counter to be 0" high

Seaford School District  
Seaford High School Additions & Renovations Planning

**DELAWARE NEW TECH ACADEMY**

**OVERVIEW**

Delaware New Tech Academy offers students a new kind of high school education. As a "school within a school" at Seaford High School, it gives students a comprehensive academic program featuring Project-Based Learning and daily use of computers and technology in the classroom.

Designed to mimic a modern business, the Academy requires students to learn and complete projects in a way that prepares them for college and the workplace.

The New Tech High School model has been proven successful at more than 60 public schools across the nation. It is not a technical or vocational program, but an academic program that teaches 21st Century skills and prepares students for both college and career.

With the New Tech Academy approach, students work in teams on real-world projects in addition to listening to lectures and using textbooks. As they progress through their projects - some of which come from businesses or institutions in the community - they are taught all the academic content and skills appropriate to their grade level. Then they apply what they have learned to the challenges of their project.

**Area A: Integrated Studio**

**Spatial Requirements**

- Number of units: 3 (1 of which is fully ADA accessible)
- Unit capacity: 50 Students, 2 Facilitators
- Unit area: 1,600 SF recommended

**Activities**

- Direct instruction
- Individual work
- Small & whole group presentations
- Workshops
- Group work
- Project Work

**Space Relationship**

- Adjacent to either a Science Laboratory or Application Studio
- Access to collaborator

**Furniture and Equipment Requirements**

**Fixed Furniture:**

2011 - FINAL Page 6

# Detailed Educational Specifications

*Concept Design*

*Charrette*







*Notice the Ed. Specs.*



SEAFORD SCHOOL  
DISTRICT

DRAFT



EDUCATIONAL  
SPECIFICATIONS

ADDITIONAL INNOVATIONS  
SEAFORD SCHOOL DISTRICT



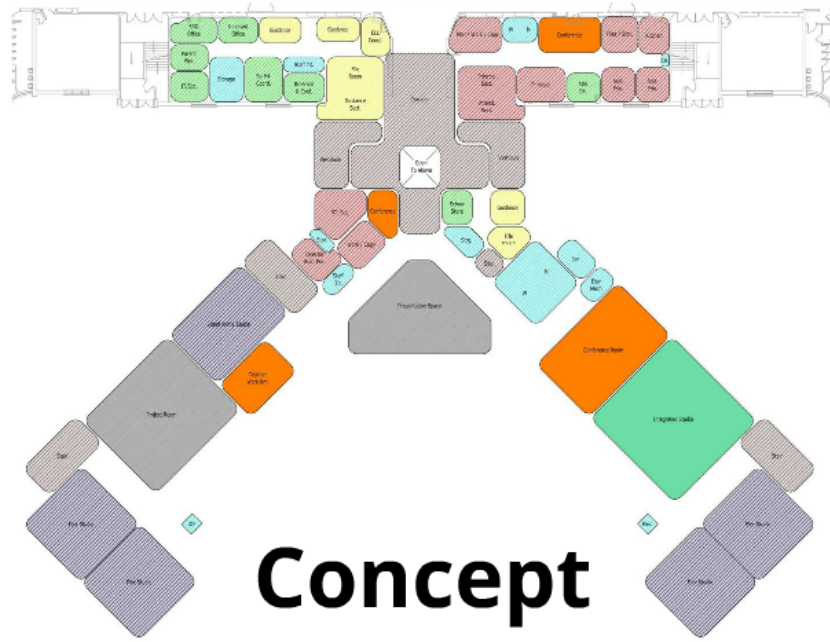
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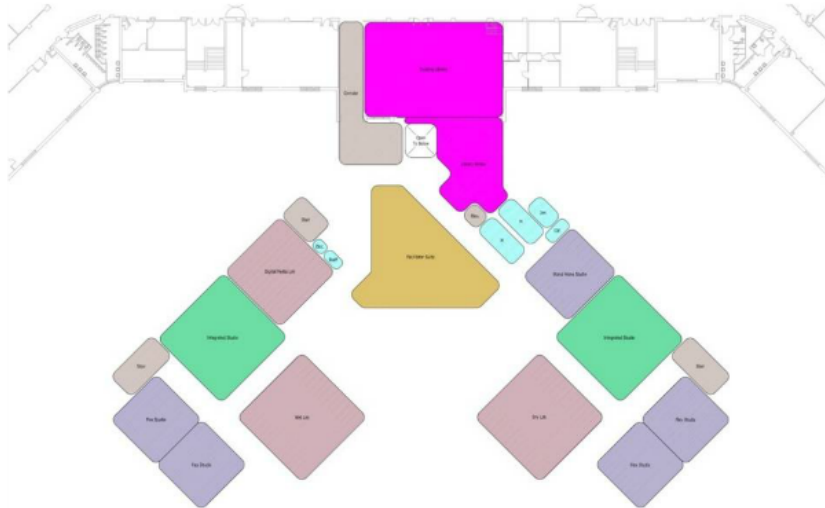
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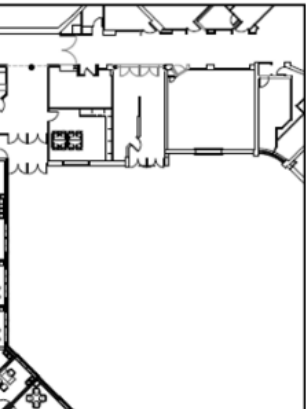




# Concept Designs



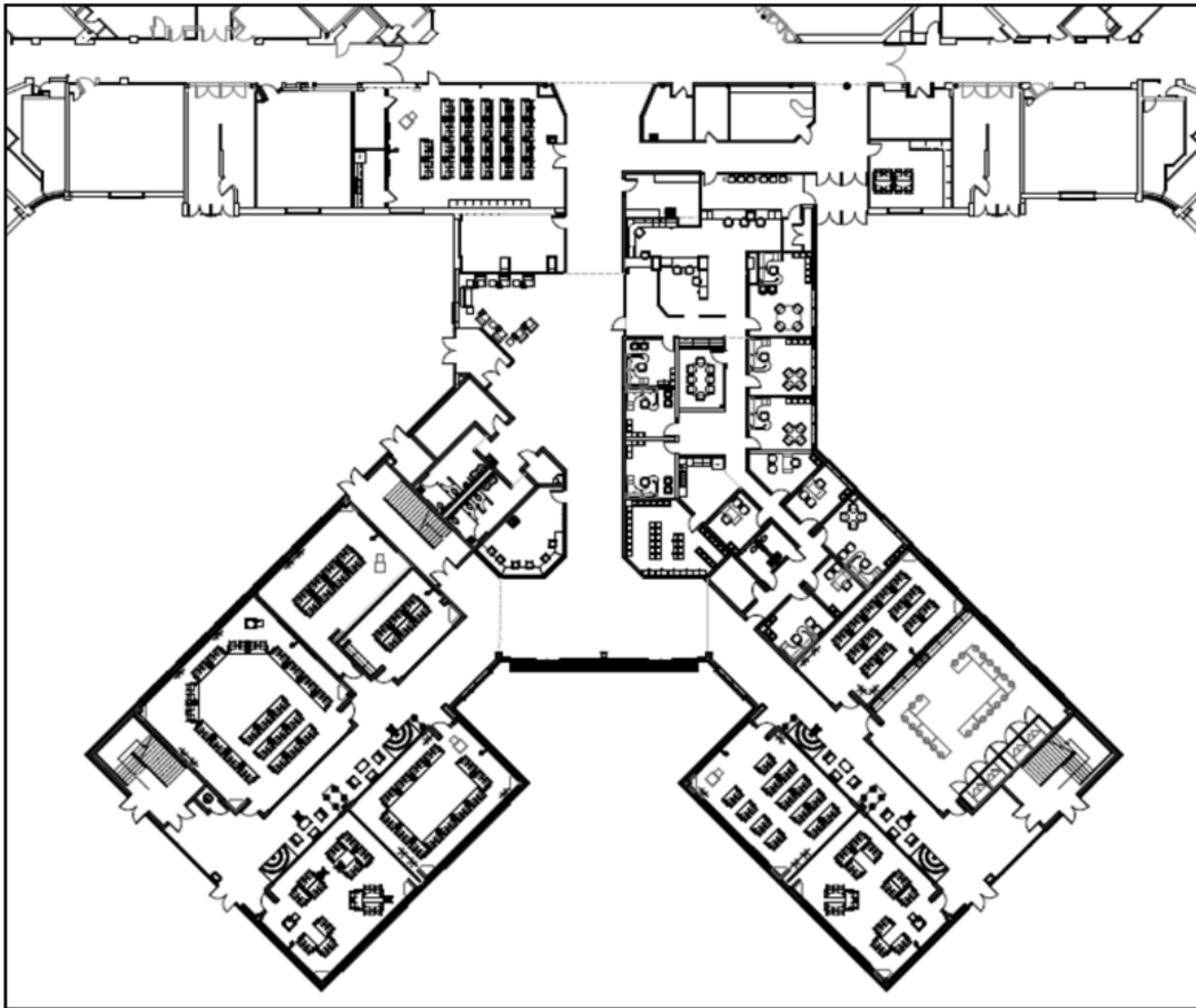
ulting In →



*Which Led To*







## The Schematic Design Phase and Beyond

There is another component to our design process that isn't normally a part of standard design that we would like to talk with you about, and that is....

Well it looks ok  
from here  
?



PEER REVIEW

# The Peers Were:

John Rigsbee, AIA

- CSO Lead Architect

Rosemary Rehak, Ph.D.

- CSO Ed. Planner

Mike Reed

- CSO Principal

**On the Engineering side....**



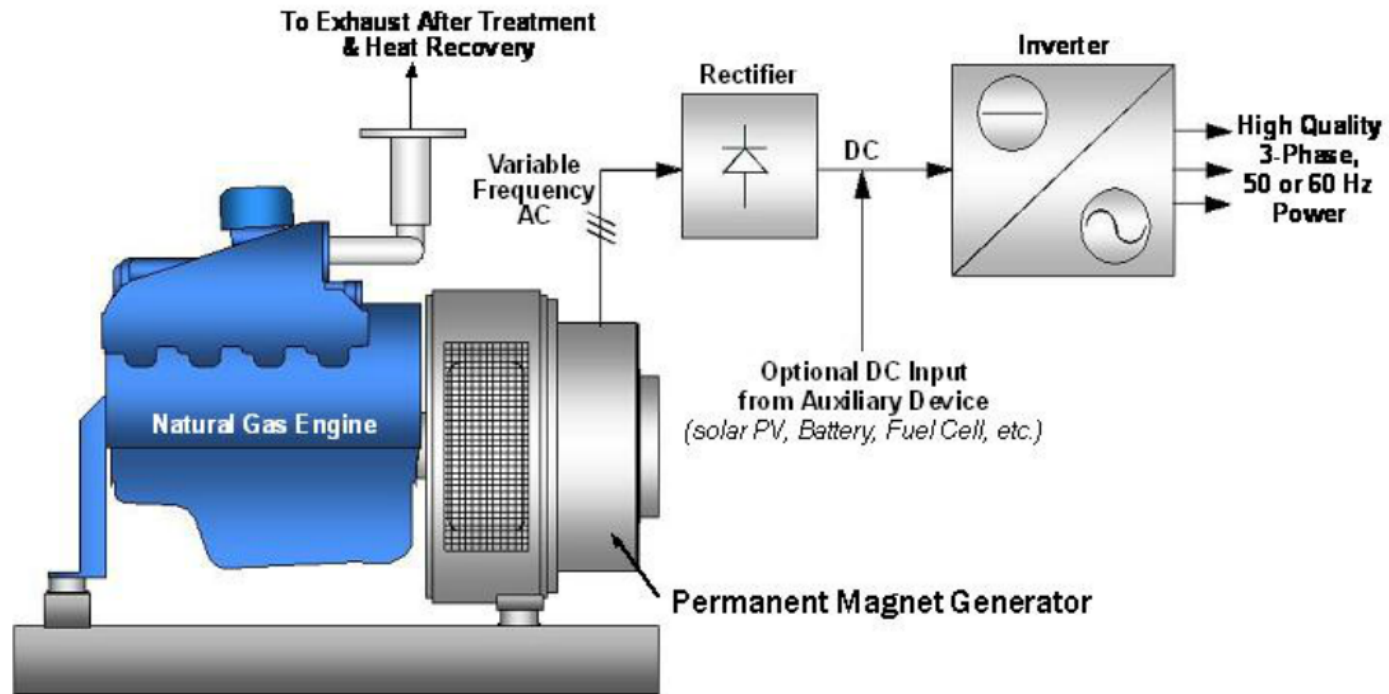


# **Sustainable Design Elements**

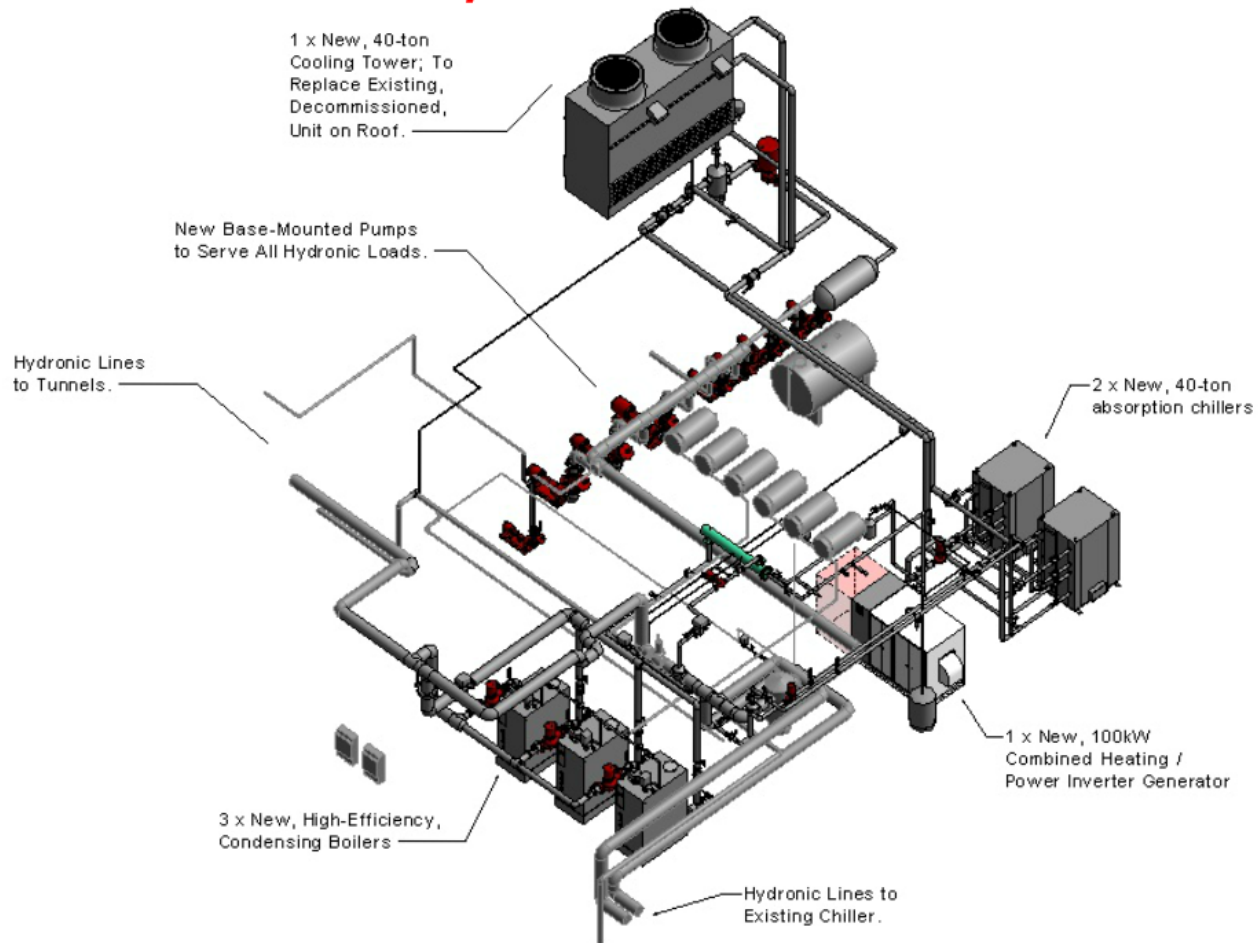


Hydronic Lines to Existing Chiller.

# Combined Heating Cooling and Power

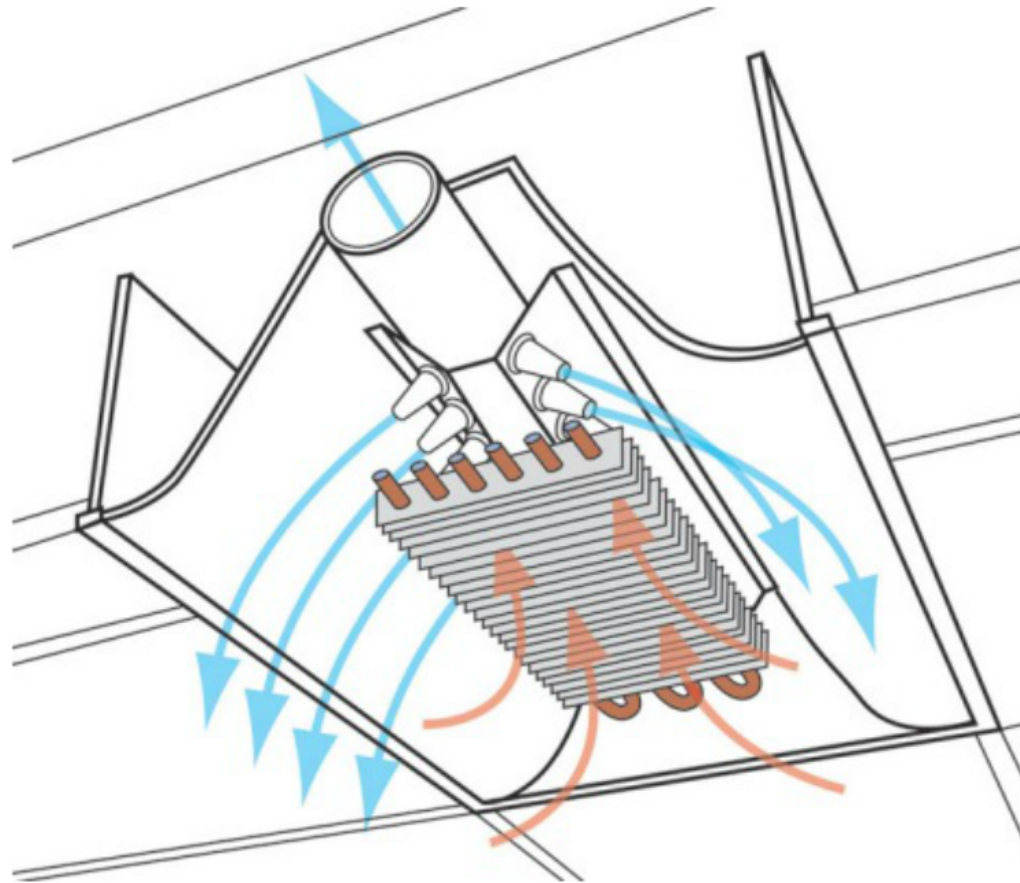


# Condensing Boilers & Absorption Chillers





# Chilled Beam HVAC



*The Results*

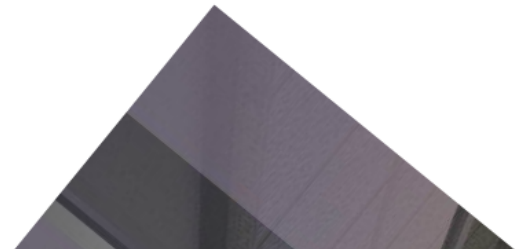
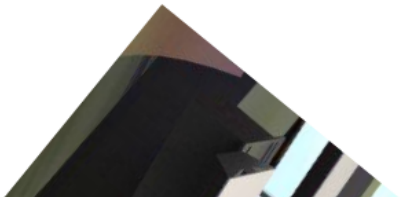


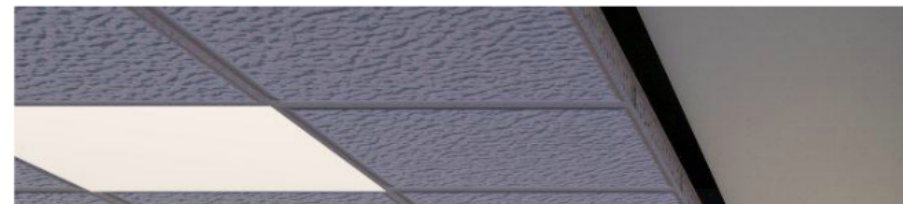








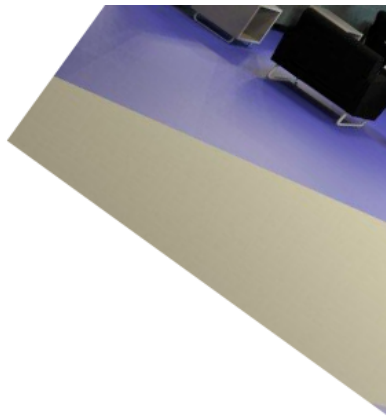








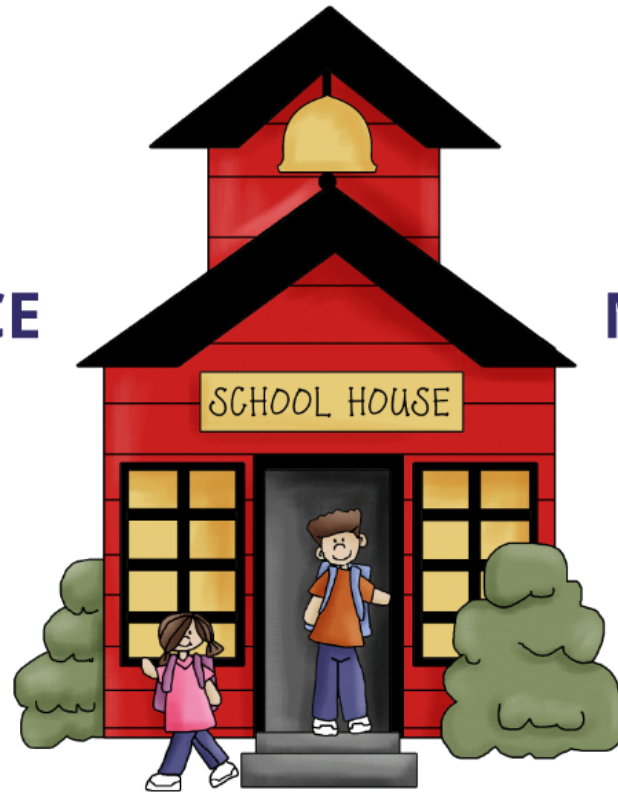




# *Your Ideas Revisited*

Remember Our Group  
Exercise?

**LEARNING SPACE**



**MATTERS !**

**WHAT DID YOU COME UP WITH?**

*Here Is What*

*New Tech Says*



# LEARNING SPACE MATTERS

- Visual transparency
- Large, open classrooms
- Wide corridors
- Mobile Furniture
- Casual gathering spaces
- Modern, professional (corporate) look
- No bells

Let's briefly review your thoughts and what New Tech advocates with what we've done in terms of design.

